

We claim:

1. A local area network adapted to supply power to powered devices over a plurality of paths thus supplying high power, the local area network comprising:

5 at least one powered device;

a hub adapted for communicating data to and from said at least one powered device;

communication cabling connecting said at least one powered device to said hub, said communication cabling comprising a first set of wire pairs  
10 utilized for communicating data between said at least one powered device and said hub and a second set of wire pairs;

a first power output adapted to supply a first power over at least a portion of said first set of wire pairs;

a second power output adapted to supply a second power over at least  
15 a portion of said second set of wire pairs; and

a combiner operable to receive said first power over said at least a portion of said first set of wire pairs and to receive said second power over said at least a portion of said second set of wire pairs, said combiner being further operable to combine said received first power and said received  
20 second power to a combined high power output.

2. A local area network according to claim 1, wherein said combiner comprises a control circuit operable to sense the successful operation of said

combiner, said control circuit supplying said combined high power output to said at least one powered device in response to said sensed successful operation of said combiner.

3. A local area network according to claim 2, wherein said control circuit  
5 is a controller.

4. A local area network according to claim 2, wherein said first power  
output and said second power output are associated with midspan power  
insertion equipment.

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5. A local area network according to claim 4, wherein said first power  
output is isolated from said second power output.

6. A local area network according to claim 4, wherein said first power  
15 output is not isolated from said second power output.

7. A local area network according to claim 1, wherein said first power  
output and said second power output comprise outputs of a single power  
source.

20 8. A local area network according to claim 1, wherein said first power  
output and said second power output comprise separate outputs derived from  
a single power source.

9. A local area network according to claim 1, wherein said second set of wires are utilized for communicating data between said at least one powered device and said hub.

10. A local area network according to claim 1, wherein at least one of said  
5 first power output and said second power output are associated with midspan power insertion equipment.

11. A local area network according to claim 10, wherein said midspan power insertion equipment conforms to the IEEE 802.3af standard.

12. A local area network according to claim 1, wherein at least one of said  
10 first power output and said second power output are associated with said hub.

13. A local area network according to claim 12, wherein said at least one of said first power output and said second power output associated with said hub conforms to the IEEE 802.3af standard.

14. A local area network according to claim 1, wherein said first power  
15 output is associated with said hub, and said second power output is associated with midspan power insertion equipment.

15. A local area network according to claim 1, wherein said first power  
20 output and said second power output are associated with midspan power insertion equipment.

16. A local area network according to claim 1, wherein said first power output and said second power output are associated with said hub.
17. A local area network according to claim 1, wherein said hub adapted for communicating data to and from said at least one powered device  
5 operates according to at least one of 10 Base-T, 100 Base-T and 1000 Base-T.
18. A local area network according to claim 1, wherein said combiner is operable to signal at least one of said first power output and said second  
10 power output that that said combiner is operable to produce said high power output.
19. A local area network according to claim 18, wherein said signal comprises changing the class identification.  
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20. A local area network according to claim 1, wherein said combined high power output is supplied to a load.
21. A local area network according to claim 20, wherein said load is  
20 operable in accordance with the IEEE 802.3af standard.
22. A local area network according to claim 20, wherein said load comprises at least one of: a wireless access point; a laptop computer; a desk  
top computer; a security camera having at least one of pan, tilt and zoom  
25 functionality; and an entrance control device.

23. A local area network according to claim 20, wherein said combiner is located within said load.

24. A local area network according to claim 20, wherein said load is  
5 operable in a low power mode and a high power mode.

25. A local area network according to claim 24, wherein said combiner is further operable to supply low power to said load for operation of said load in said low power mode in the absence of said combined high power.

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26. A local area network according to claim 25, wherein said combiner is further operable to signal said load of said low power supply operation.

27. A combiner for use with a powered device having high power needs, the combiner comprising:

15 a first power input adapted to receive a first power signal over a first set of wire pairs utilized to carry communication data;

a second power input adapted to receive a second power signal over a second set of wire pairs, wherein said first power signal is combined with said second power signal to produce a combined high power signal; and

20 a control circuit operable to sense said combined high power signal and to supply said combined high power signal to a powered device in response to said sensed combined high power signal.

28. A combiner according to claim 27, wherein said powered device is operable in accordance with the IEEE 802.3af standard.

29. A combiner according to claim 27, wherein said powered device  
5 comprises at least one of: a wireless access point; a laptop computer; a desk top computer; a security camera having at least one of pan, tilt and zoom functionality; and an entrance control device.

30. A combiner according to claim 27, wherein said combiner is located  
10 within said powered device.

31. A combiner according to claim 27, wherein said combiner is located outside of said powered device.

32. A combiner according to claim 27, wherein said combiner is operable  
15 in a low power mode in the absence of said sensed combined high power signal.

33. A combiner according to claim 27, wherein said control circuit is  
20 further operable to supply a low power signal to said load for operation in a low power mode in the absence of said combined high power signal.

34. A combiner according to claim 33, wherein said control circuit is further operable to signal said load of said low power mode.  
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35. A combiner according to claim 27, wherein said control circuit is a controller.

36. A combiner according to claim 27, further comprising at least one DC/DC converter.

5 37. A combiner according to claim 27, further comprising a first DC/DC converter associated with said first power input and a second DC/DC converter associated with said second power input.

38. A combiner according to claim 37, wherein said first DC/DC  
10 converter is connected in series with said second DC/DC converter.

39. A combiner according to claim 37, wherein said first DC/DC converter is connected in parallel with said second DC/DC converter.

15 40. A combiner according to claim 37, further comprising a first PWM/resonance controller associated with said first DC/DC converter and a second PWM/resonance controller associated with said second DC/DC converter.

41. A combiner according to claim 27, further comprising a transformer having a first primary associated with said first power input and a second primary associated with said second power input.

5 42. A combiner according to claim 41, wherein said transformer comprises a secondary associated with said combined high power.

43. A method of supplying power to a powered device comprising the steps of:

- 10 a) receiving a first power over a first set of wire pairs;
- b) receiving a second power over a second set of wire pairs;
- c) combining said first power and said second power;
- d) sensing the success of said combining of said first power and said second power; and
- 15 e) enabling a combined high power output in response to said sensing.

44. A method of supplying power to a powered device according to claim 43, further comprising the steps of:

- f) sensing an unsuccessful combining of said first power and said
- 20 second power;



g) comparing at least one of said first and said second received power to a reference; and

h) supplying low power in response to said comparing.

5 45. A method of supplying power to a powered device according to claim 44, further comprising the step of:

i) signaling the powered device of said supplied low power.

46. A method of supplying power to a powered device according to claim 10 43, further comprising the step of:

j) signaling at least one of at least one of the source of said received first power and the source of said received second power of said combining.

47. A method of supplying power to a powered device according to claim 15 46, wherein the step of signaling comprises changing the classification.